UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,542	10/30/2003	Toru Tanada	FUJX 20.712	7563

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/697,542	TANADA, TORU
	Examiner	Art Unit	
	Sori A. Aga	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 October 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☒ All   b)☐ Some *   c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date *10/30/2003 & 07/18/2007*.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claim1,5,6,8,9,11,13 and 17 rejected under 35 U.S.C. 102(b) as being anticipated by

Akahane et al. (US 20010050914 A1) (herein after Akahane).

> Regarding claim 1: Akahane teaches interfacing device comprising an interfacing section
>
> with links having a CAM for accommodating a VPN capable of routing relating to a VPN
>
> according to information stored in the CAM . Akahane teaches, "…VPN identification is
>
> performed by …logical channels (links) multiplexed and terminated to a physical
>
> interface…" (Paragraph 0016 lines 2-3)
>
> Regarding a communication processing section for performing routing or filtering
>
> relating to the VPN according to information that is stored in a CAM; Akahane teaches
>
> "…edge router (communication processing section) searches the routing table
>
> (information stored in CAM) for the …VPN, determines the forwarded-to-destination of
>
> the packet across the ISP network… can forward (route) the packets to their correct
>
> destinations without mistaking one for another. …". The routing table is considered to be
>
> the same as Akahane's routing table because Akahane teaches that the logical table can
>
> be structured using CAM. (Paragraph 0072).

Akahane also teaches a plurality of interfacing sections each in separate memories

(CAM) (Paragraph 007 lines 6-9 and Paragraph 0066 lines 4-6).

Akahane also teaches a VPN Identification table (storage section) for registering therein

in advance a combination of identifiers of interfacing sections accommodating the VPNs

therein individually. Figure 7A and 7B show examples of such a table. VPN ID can be a

physical interface number (interfacing section) as shown in fig. 7B. Fig. 7A/B also show

physical interface numbers are mapped to corresponding VPNs individually.

The routing table is considered to be the same as Akahane's routing table because

Akahane teaches that the logical table can be structured using CAM. (Paragraph 0072).

Claim 5: All the limitations of claim 1 are included in claim 5. Akahane teaches all the

limitations of claim 1 as discussed above regarding claim 1. Regarding the switching

section for delivering a packet among the plurality of interfacing sections, Akahane

teaches a switch (51) that is capable of receiving packets via input lines (physical

interfaces) and through lower layer and packet layer processors. Packets can be input and

outputted through the designated output route numbers (fig.4 and paragraph 0068).

Claim 6: All the limitations of claim 5 are included in claim 6. Akahane teaches all the

limitations of claim 1 as discussed above regarding claim 5. Regarding the plurality of

interfacing sections and the switching section interfacing with different autonomous

systems in data link or transport layer, Akahane teaches each LAN (autonomous system)

is interfaced with the router as shown in figs 1 and 3. Akahane also teaches "...VPN edge

router ...by using the identifiers of logical channels multiplexed and terminated to a

physical interface. As the logical channel identifiers, information for lower layer

protocols below IP is used..." (paragraph 0012 lines 1-5). A person having ordinary skill

in the art would know data link layer is lower layer protocol than IP (i.e. Network layer)

in both the OSI and TCP/IP models.

Regarding the different autonomous systems being intervenient in all or part of the VPNs,

figures 1,2 and 3 show plural VPNs (autonomous systems) found within VPNA and

VPNB.

Claim 8: All the limitations of claim 5 are included in claim8 Akahane teaches all the

limitations of claim 5. Regarding the switching section delivering all of the routing

information between the controlling section and the plurality of interfacing sections;

Akahane teaches a switch (switching section) that receives packets and distributes among

interfaces and processors as described regarding claim 5. Since the routing information is

included in the headers of the packet (as discussed regarding claim 13), the switching

section delivers the routing information together with the packets.

Claim 9: All the limitations of claim 6 are included in claim 9. Akahane teaches all the

limitations of claim 6 as discussed above. The limitation included in claim 9 is the same

as the limitations in claim 8. Akahane teaches the limitations of claim 8 as discussed

above.

Claim 11: All the limitations of claim 1 are included in claim 1. Akahane teaches all the

limitations of claim 1 as discussed above. Regarding the controlling section delivering

routing information to the plurality of interfacing sections via a communication link;

Akahane teaches a Akahane teaches a switch (switching section) that receives packets

including routing information and distributes among interfaces and processors as described regarding claim 5. A person having ordinary skill in the art would consider the switching section as a communication link since information is sent and received across the switch.

Regarding claim 13: where a network-interfacing device comprising an interfacing section interfacing with a link accommodating a VPN; Akahane teaches, "...VPN identification is performed by ...logical channels (links) multiplexed and terminated to a physical interface..." (Paragraph 0016 lines 2-3)

Regarding a communication processing section for performing routing or filtering relating to the VPN according to information that is stored in a CAM; Akahane teaches "...edge router (communication processing section) searches the routing table (information stored in CAM) for the ...VPN, determines the forwarded-to-destination of the packet across the ISP network... can forward (route) the packets to their correct destinations without mistaking one for another. ...". The routing table is considered to be the same as Akahane's routing table because Akahane teaches that the logical table can be structured using CAM. (Paragraph 0072).

Regarding the controlling section for writing routing information to the CAM, Akahane teaches "...routing table for VPN contains the entries of destination IP address..." (paragraph 0066 lines 7-8). Akahane further teaches that IP packet information can be extracted from received IP packet headers (Paragraph 0057 lines 10-11). Therefore Akahane teaches that routing information (IP address) is written to the CAM (table). And

since destination IP addresses are included in said routing tables (paragraph 0038 line 7),

this information (destination address) is delivered from an exterior.

Claim 17: All the limitations of claim 13 are included in claim 17. Akahane teaches all

the limitations of claim 13 as discussed above. Regarding the routing information being

received via a port connected to the communication processing section, Akahane teaches

"...packets are received across the line (55) to the lower layer processor (53) and

forwarded across the line (56) from the lower layer processor (54)...." (Paragraph 0056).

Akahane refers to the input lines as having points at which they connect to the router.

Therefore, the input lines along with the lower layer processors are considered to be the

same as ports since packet are received via the input lines from outside the router.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claim 2,3,14 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over

Akahane as applied to claim 13 above and further in view of Siegel et al. (US 6266336 B1)

(herein after Siegel).

Claims 2 and 3: All the limitations of claim 1 are included in claims 2 and 3. Akahane

teaches all the limitations of claims 2 and 3. However Akahane does not explicitly teach a

controlling section that omits requesting for writing overlapping pieces of routing

information and interfacing sections that maintain uniqueness of each piece of routing

information. However Siegel in the same field of endeavor (packet switching) teaches

that an exit block (controlling section) prevents duplicate entries from entering the table

(Column 8 line 18). Therefore it would have been obvious at the time of the invention to

avoid duplicate entries in a routing table (both as a result of request by the controlling

section and by the interfacing sections maintaining uniqueness) in order to shorten the

length of entries that will have to be searched and also efficiently use memory.

Claim 14: All the limitations of claim 13 are included in claim 14. Akahane teaches all

the limitations of claim 13 as discussed above. However Akahane does not explicitly

teach the controlling section maintains uniqueness of the information stored in the CAM.

However Siegel in the same field of endeavor (packet switching) teaches that an exit

block (controlling section) prevents duplicate entries from entering the table (Column 8

line 18). Therefore it would have been obvious at the time of the invention to avoid

duplicate entries in a routing table in order to shorten the length of entries that will have

to be searched and also efficiently use memory.

Claim 18: All the limitations of claim 14 are included in claim 18. The references teach

all the limitations of claim 14 as discussed above regarding claim 14. Regarding the

routing information being received via a port connected to the communication processing

section, Akahane teaches "...packets are received across the line (55) to the lower layer

processor (53) and forwarded across the line (56) from the lower layer processor (54)...."

(paragraph 0056). Akahane refers to the input lines as having points at which they

connect to the router. Therefore, the input lines along with the lower layer processors are considered to be the same as ports since packet are received via the input lines from outside the router.

3.   Claim 4 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Akahane et al. (US 20010050914 A1) (herein after Akahane) in view of Sugai et al. (US 6683885 B1) (herein after Sugai)

Claim 4: Akahane teaches interfacing devices comprising interfacing sections with links having a CAM for accommodating VPNs capable of routing relating to a VPN according to information stored in the CAMs . (Paragraph 0016 lines 2-3, Paragraph 007 lines 6-9 and Paragraph 0066 lines 4-6)

It is inherent that Akahane's router to have a means for delivering routing information to the interfacing sections and writing said information to the CAMs (tables); Akahane does not specify a controlling section for delivering and interfacing sections for writing routing information to their respective CAMs said information being of the delivered routing information. However, Sugai in the same field of endeavor (network apparatus) teaches a routing manager (controlling section) distributes routing information to each routing processor (interfacing sections). (Column 5 lines 2-4).

Sugai also teaches "...routing processor (interfacing sections) stores (writes) ...the header information (routing information) on the input packets in a header memory

(CAMs); wherein the header memory is accessed to search for the destination of the input packets stored in the packet buffer based on the stored header information..."

It would have been obvious at the time of the invention to add a controlling section for delivering routing information to the interfacing sections and enable the packet processing card (interfacing section) write routing information to the CAMs (routing tables) in order to execute high-speed operation of route search by use of a high-speed memory as some of the parts into which the storage unit is divided.

Claim 12: All the limitations of claim 4 are included in claim 12. The references teach all the limitations of claim 4. Akahane further teaches routing information is delivered via a communication link as discussed regarding claim 11.

4.   Claim 7 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Akahane as applied to claim 1 above in view of Bonomi et al (US 2002/0105952 A1). (herein after Bonomi).

Claim 7: all the limitations of claim 5 are included in claim 7. Akahane teaches all the limitations of claim 5. However, Akahane does not explicitly teach the function of the controlling section is distributed to ports. However, Bonomi, in the same field of endeavor (Network switch) teaches that central functions of the switch (as shown in figure 4) can be more distributed or centralized as needed in order to adopt to various available technologies, price/performance goals etc.

Claim 10: All the limitations of claim 7 are included in claim 10. The references teach all the limitations of claim 7 as discussed above. The limitation included in claim 10 is the

same as the limitations in claim 8. Akahane teaches the limitations of claim 8 as

discussed regarding claim 8.

5.   Claim15 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Akahane as

applied to claim 13 above in view of Yim (US 2002/0052972 A1) (herein after Yim).

   Claims 15: All the limitations of claim 13 are included in claim 15. Akahane teaches all

   the limitations of claim 13 as discussed above regarding claim 13. However, Akahane

   does not explicitly teach a controlling section for requesting the exterior to supply routing

   information when a predetermined event has occurred. However, Yim in the same field

   of endeavor (switch/router) teaches that a switching router broadcasts an ARP request in

   to an external VLAN (VLAN 300) in order to learn the address of the destination host

   (host 301). Yim teaches that the request is generated by the second router 200 to the

   second VLAN 300 (VLAN 300 is an external VLAN because the host101 and router 200

   belong to VLAN100) (Paragraph 0042 lines 8-18). Yim further teaches that the ARP

   request is generated as a result of host 101 sending a request to the internal router 200

   (paragraph 0042 lines 1-6). Therefore, it would have been obvious at the time of the

   invention request the exterior (VLAN 300) to supply routing information when a

   predetermined event has occurred (when a host inside the VLAN wants to connect with a

   host in VLAN 300 and transmits a request to the switch).

   Claim 19: All the limitations of claim 15 are included in claim 19. The references teach

   all the limitations of claim 15 as discussed above regarding claim 15. Regarding the

   routing information being received via a port connected to the communication processing

section, Akahane teaches "...packets are received across the line (55) to the lower layer

processor (53) and forwarded across the line (56) from the lower layer processor (54)...."

(paragraph 0056). Akahane refers to the input lines as having points at which they

connect to the router. Therefore, the input lines along with the lower layer processors are

considered to be the same as ports since packet are received via the input lines from

outside the router.

6.   Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Akahane and Siegel

as applied to claim14 above, and further in view of Yim (US 2002/0052972 A1) (herein after

Yim).

Claim 16: All the limitations of claim 14 are included in claim 16. The references teach

all the limitations of claim 14 as discussed above regarding claim 16. However, Akahane

does not explicitly teach a controlling section for requesting the exterior to supply routing

information when a predetermined event has occurred. However, Yim in the same field

of endeavor (switch/router) teaches that a switching router broadcasts an ARP request in

to an external VLAN (VLAN 300) in order to learn the address of the destination host

(host 301). Yim teaches that the request is generated by the second router 200 to the

second VLAN 300 (VLAN 300 is an external VLAN because the host101 and router 200

belong to VLAN100) (Paragraph 0042 lines 8-18). Yim further teaches that the ARP

request is generated as a result of host 101 sending a request to the internal router 200

(paragraph 0042 lines 1-6). Therefore, it would have been obvious at the time of the

invention request the exterior (VLAN 300) to supply routing information when a

predetermined event has occurred (when a host inside the VLAN wants to connect with a

host in VLAN 300 and transmits a request to the switch).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sori A. Aga whose telephone number is (571) 270-1868. The

examiner can normally be reached on M-Th 7:30-5:00,   F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Charles Garber can be reached on (571) 270-1868. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S.A.